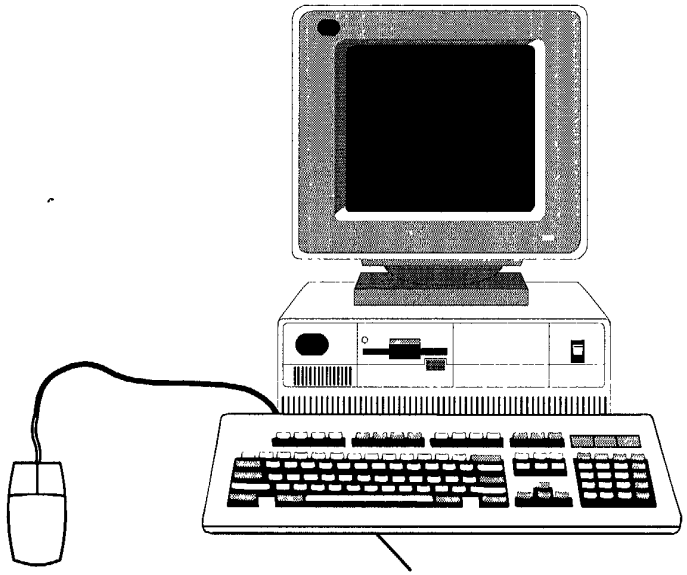
Docket 3256.3.0.0



Computer System
1

FIG. 1

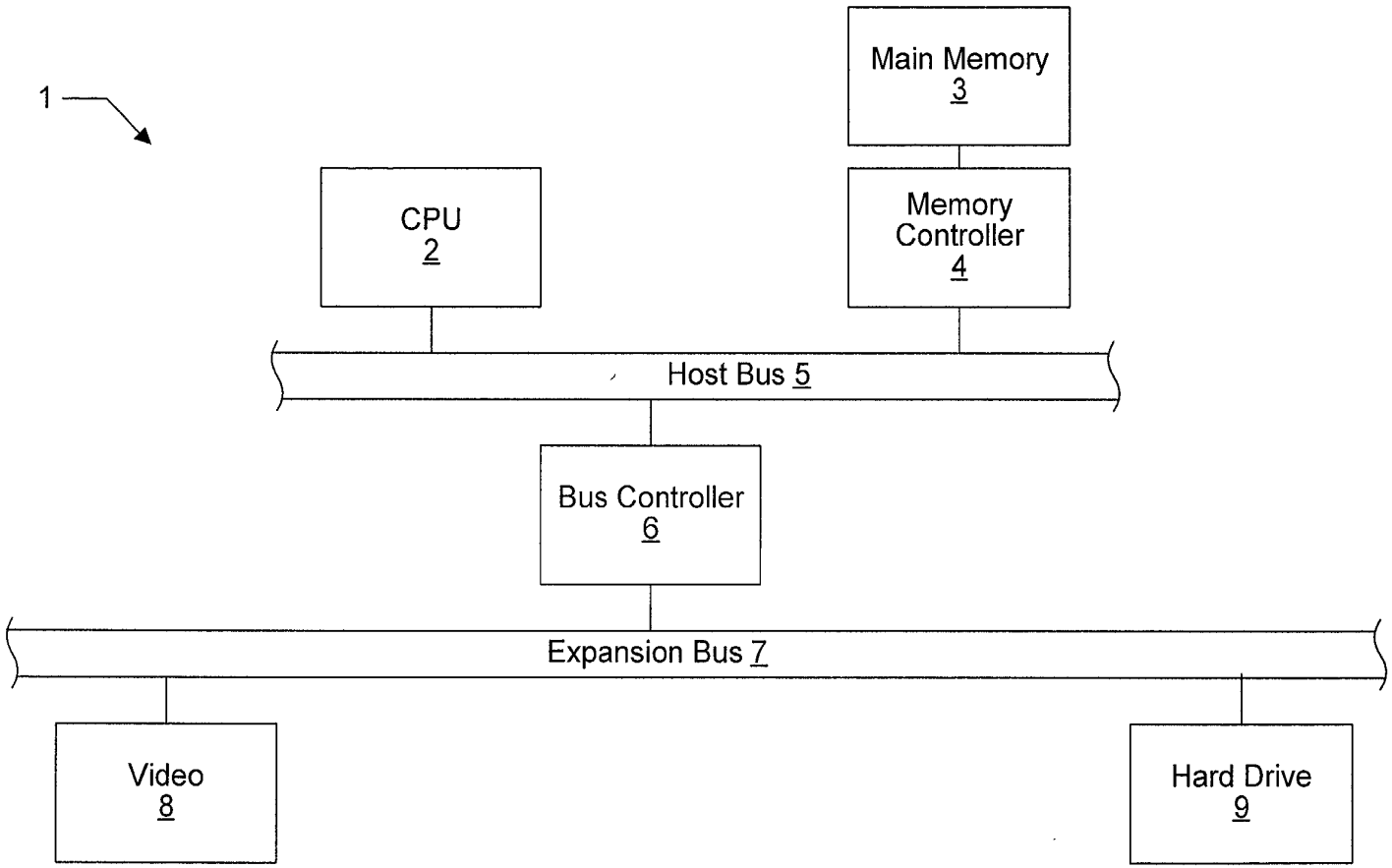

1
Main Memory
3
CPU
2
Memory
Controller
4
Host Bus 5
Bus Controller
6
Expansion Bus 7
Video
8
Hard Drive
9

FIG. 2

Case 1:10-cv-00000-JJF Document 1-3 Filed 00/00/10 Page 3 of 3 PageID #: 00

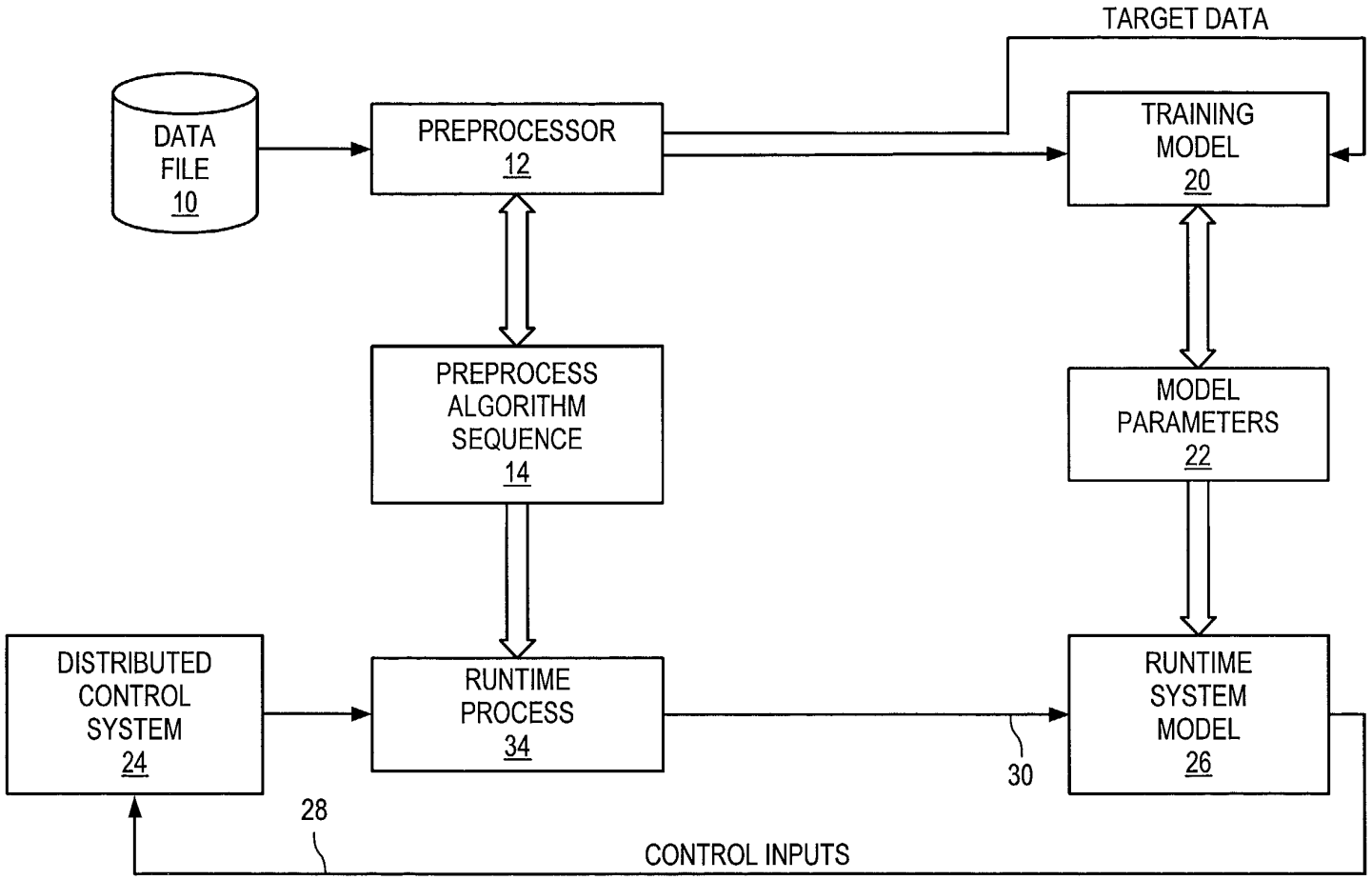


FIG. 3A

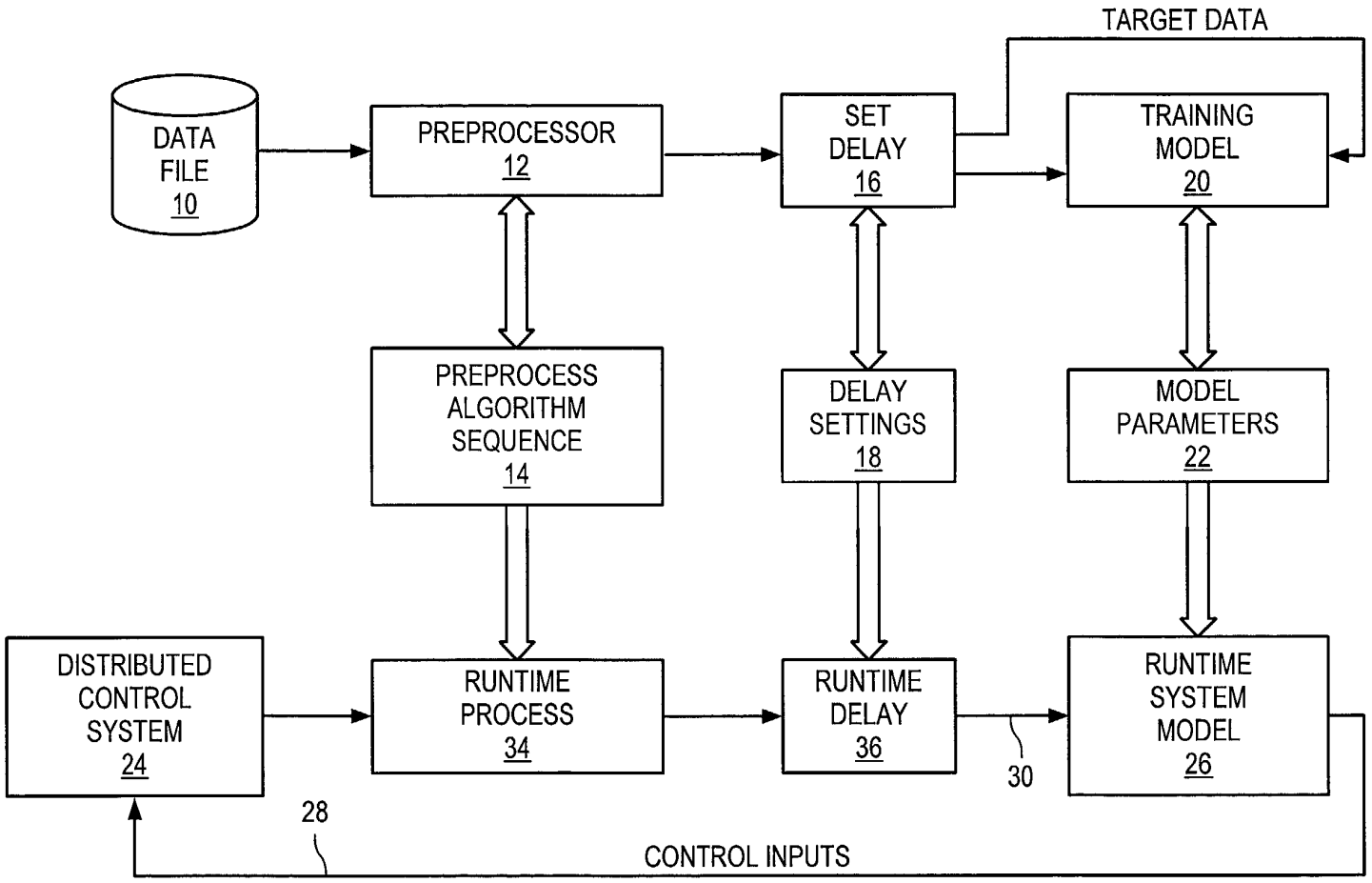

TARGET DATA
DATA FILE 10
PREPROCESSOR 12
SET DELAY 16
TRAINING MODEL 20
PREPROCESS ALGORITHM SEQUENCE 14
DELAY SETTINGS 18
MODEL PARAMETERS 22
DISTRIBUTED CONTROL SYSTEM 24
RUNTIME PROCESS 34
RUNTIME DELAY 36
RUNTIME SYSTEM MODEL 26
30
28
CONTROL INPUTS

FIG. 3B

Customer Number 32425

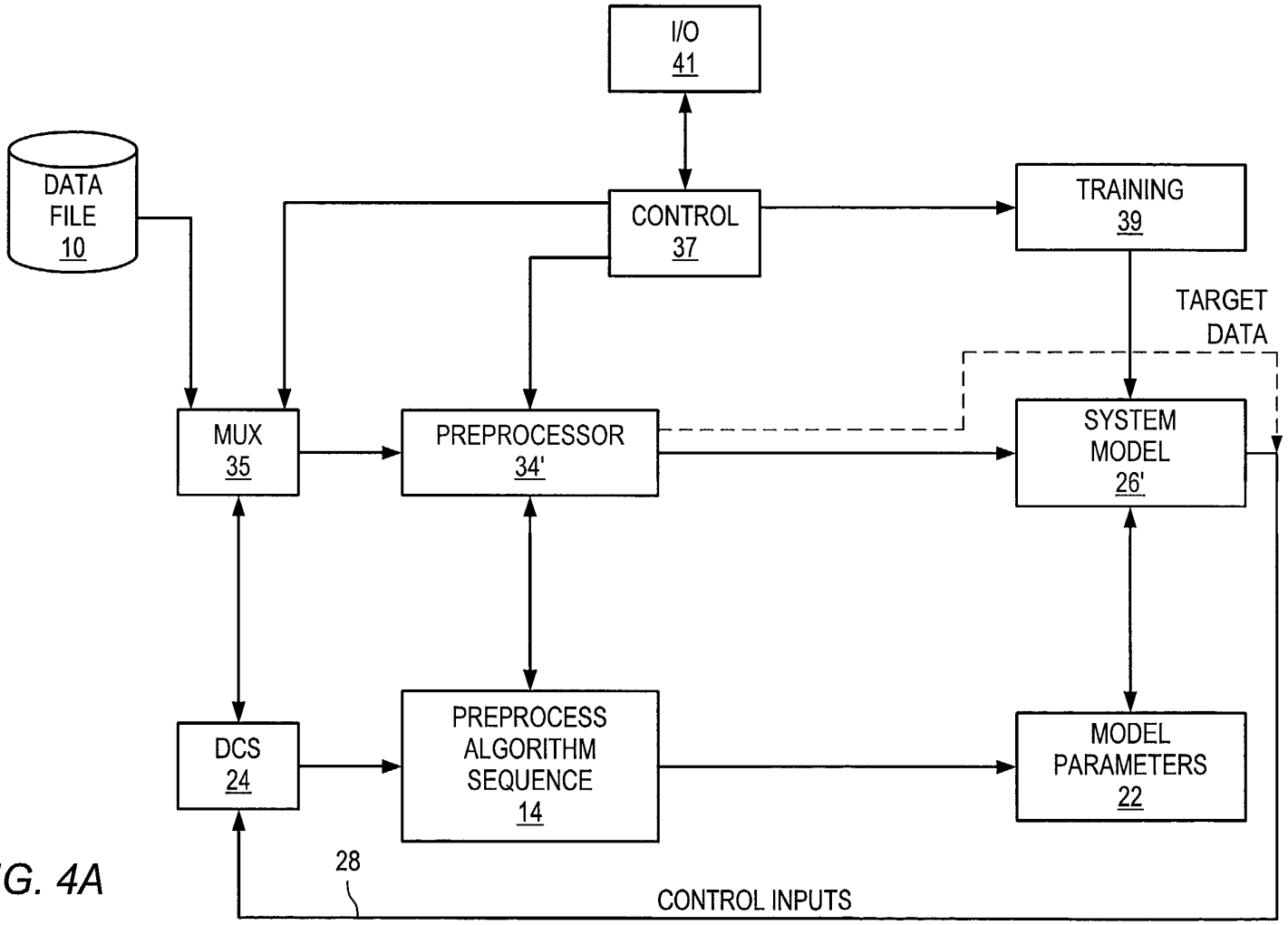


FIG. 4A

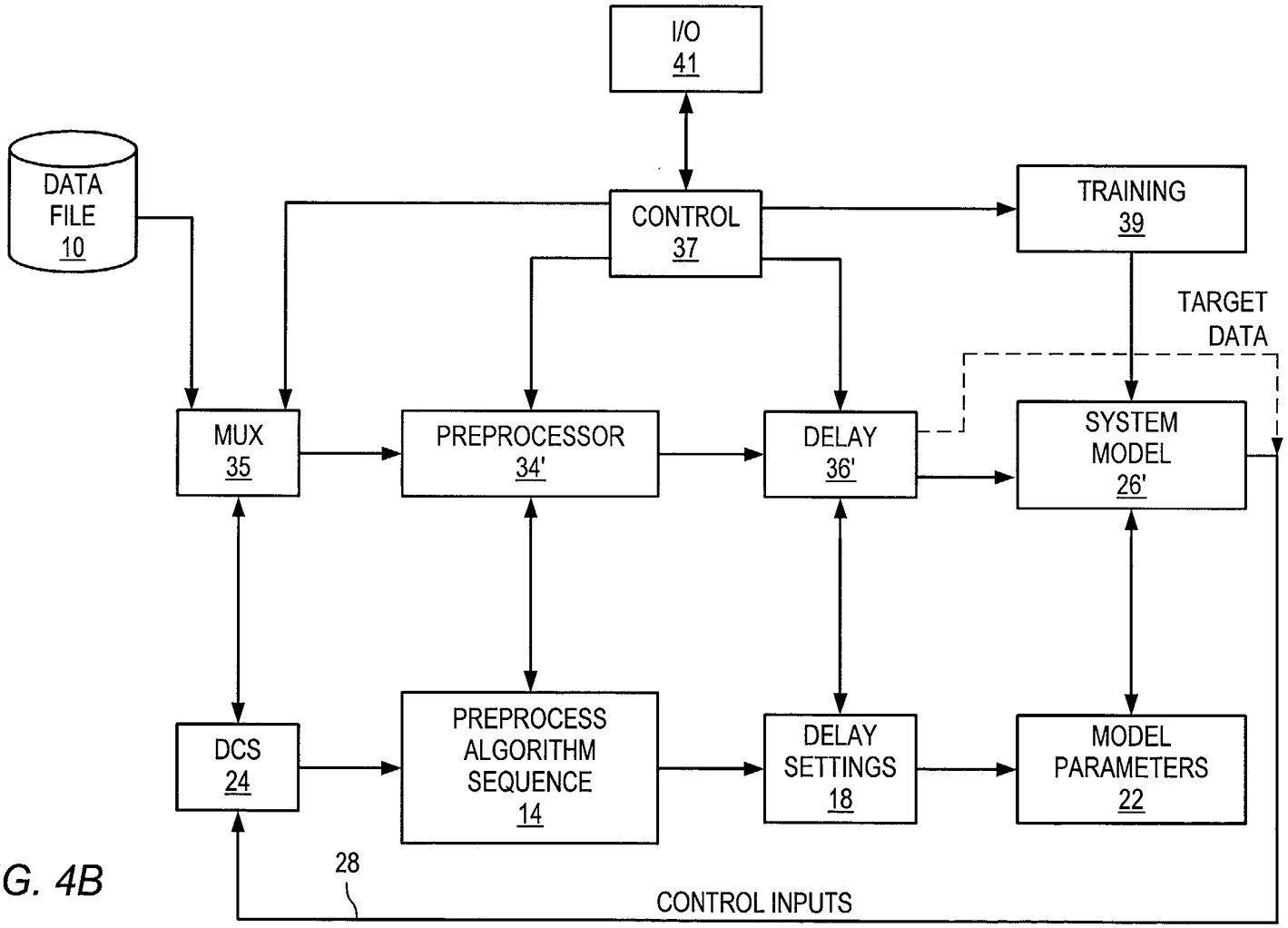

I/O
41
DATA
FILE
10
CONTROL
37
TRAINING
39
TARGET
DATA
MUX
35
PREPROCESSOR
34'
DELAY
36'
SYSTEM
MODEL
26'
DCS
24
PREPROCESS
ALGORITHM
SEQUENCE
14
DELAY
SETTINGS
18
MODEL
PARAMETERS
22
28
CONTROL INPUTS

FIG. 4B

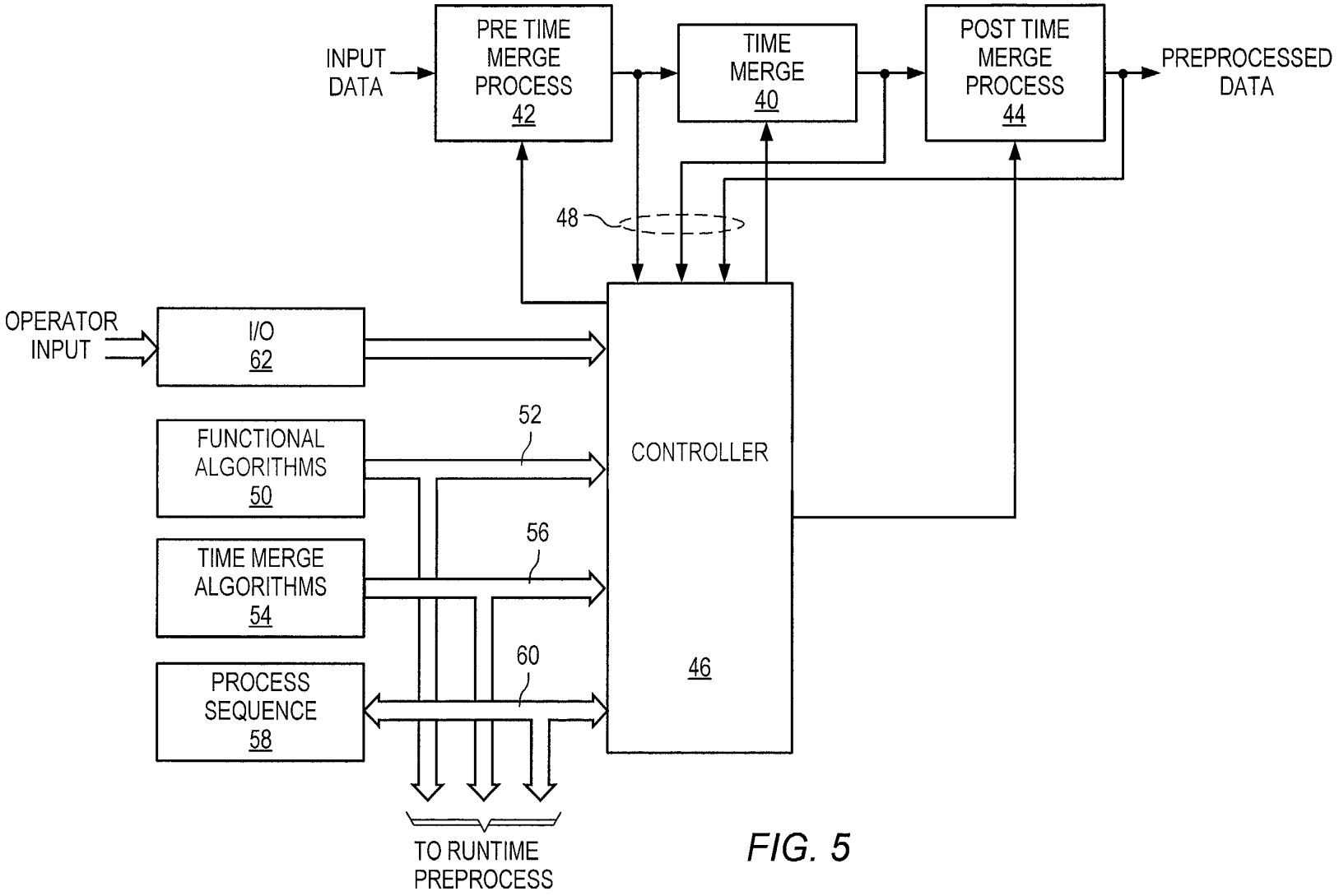

INPUT DATA
PRE TIME MERGE PROCESS 42
TIME MERGE 40
POST TIME MERGE PROCESS 44
PREPROCESSED DATA
48
OPERATOR INPUT
I/O 62
FUNCTIONAL ALGORITHMS 50
52
CONTROLLER
TIME MERGE ALGORITHMS 54
56
PROCESS SEQUENCE 58
60
46
TO RUNTIME PREPROCESS

FIG. 5

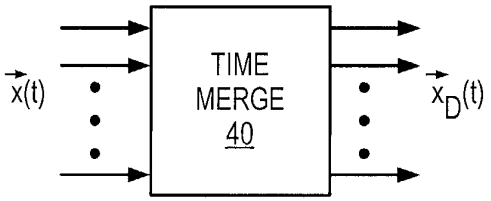


FIG. 6

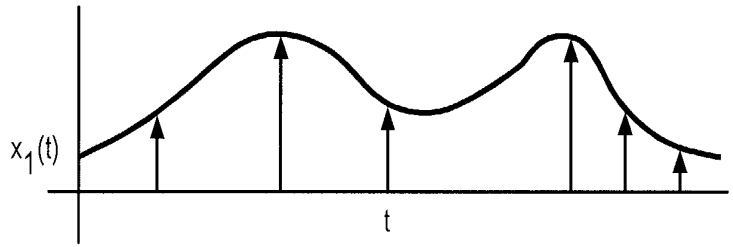


FIG. 7A

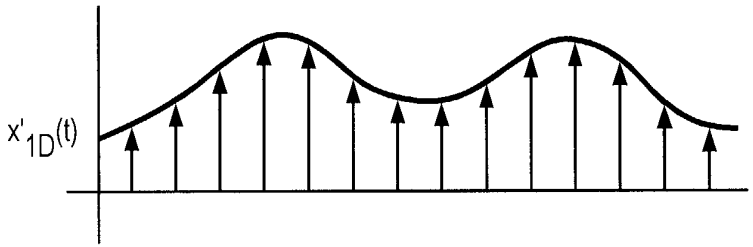


FIG. 7B

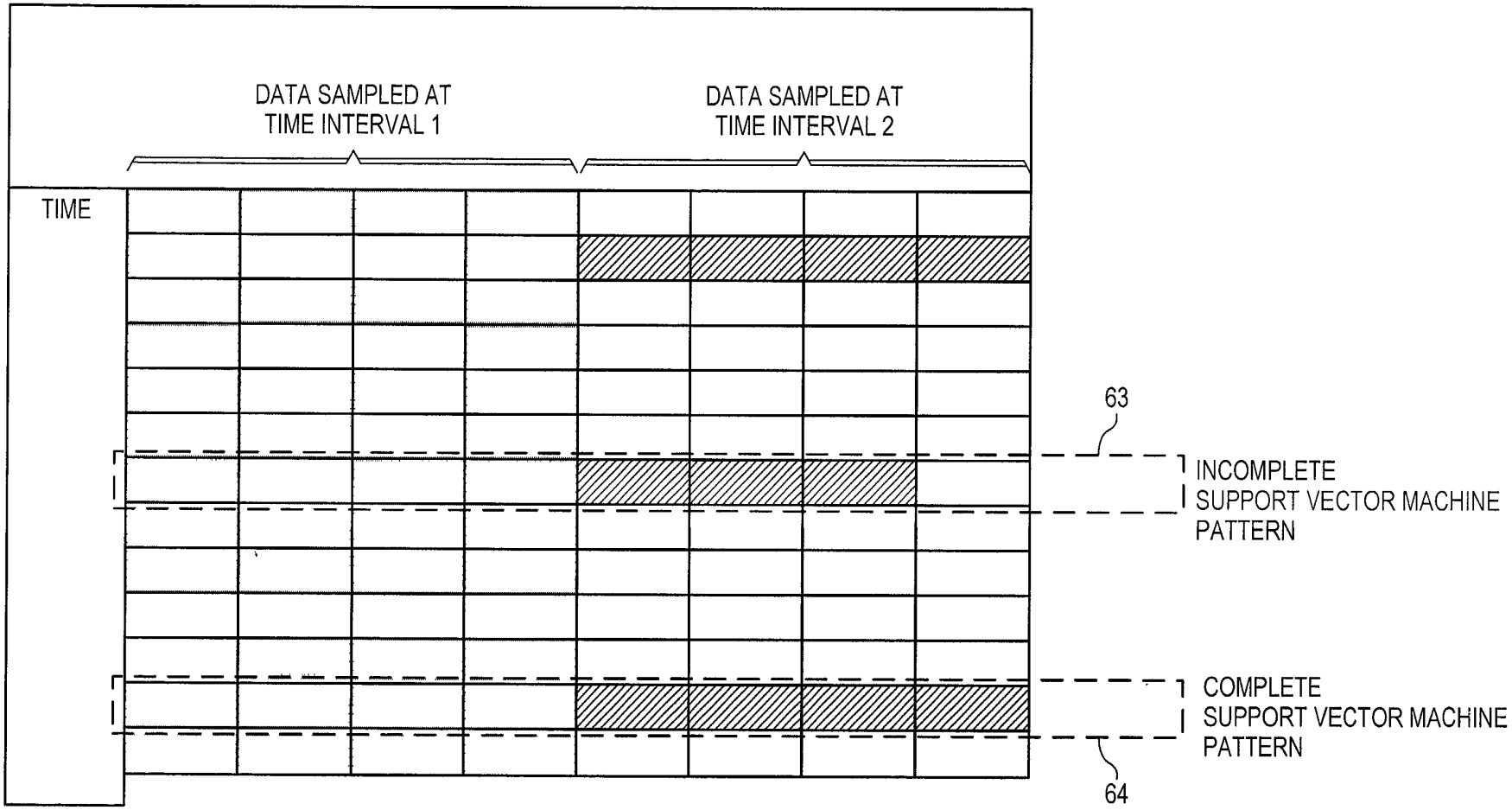

DATA SAMPLED AT
TIME INTERVAL 1
DATA SAMPLED AT
TIME INTERVAL 2
TIME
63
INCOMPLETE
SUPPORT VECTOR MACHINE
PATTERN
COMPLETE
SUPPORT VECTOR MACHINE
PATTERN
64

FIG. 8A

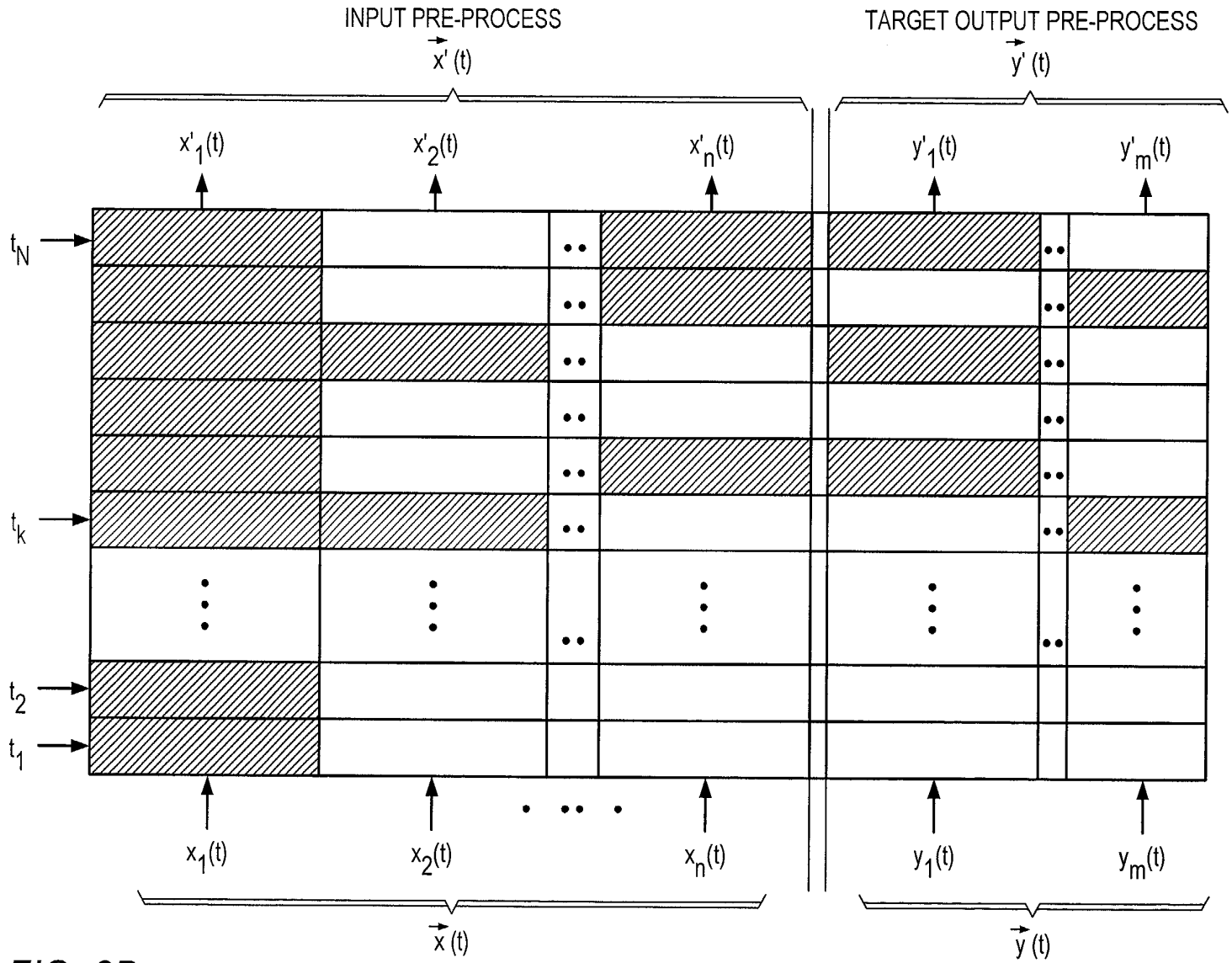
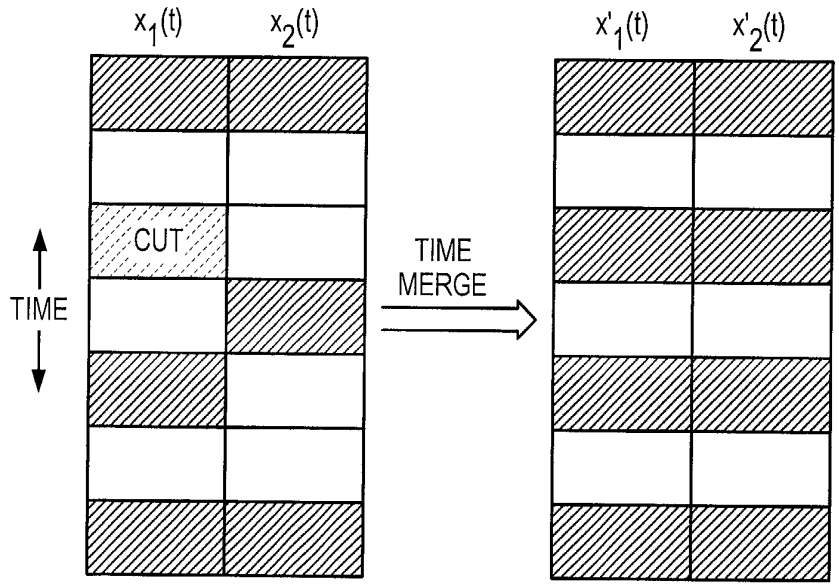

INPUT PRE-PROCESS
$\vec{x}'(t)$
TARGET OUTPUT PRE-PROCESS
$\vec{y}'(t)$
$x'_1(t)$
$x'_2(t)$
$x'_n(t)$
$y'_1(t)$
$y'_m(t)$
t_N
t_k
t_2
t_1
$x_1(t)$
$x_2(t)$
$x_n(t)$
$y_1(t)$
$y_m(t)$
$\vec{x}(t)$
DATA INPUT
$\vec{y}(t)$
TARGET OUTPUT

FIG. 8B

FIG. 8C



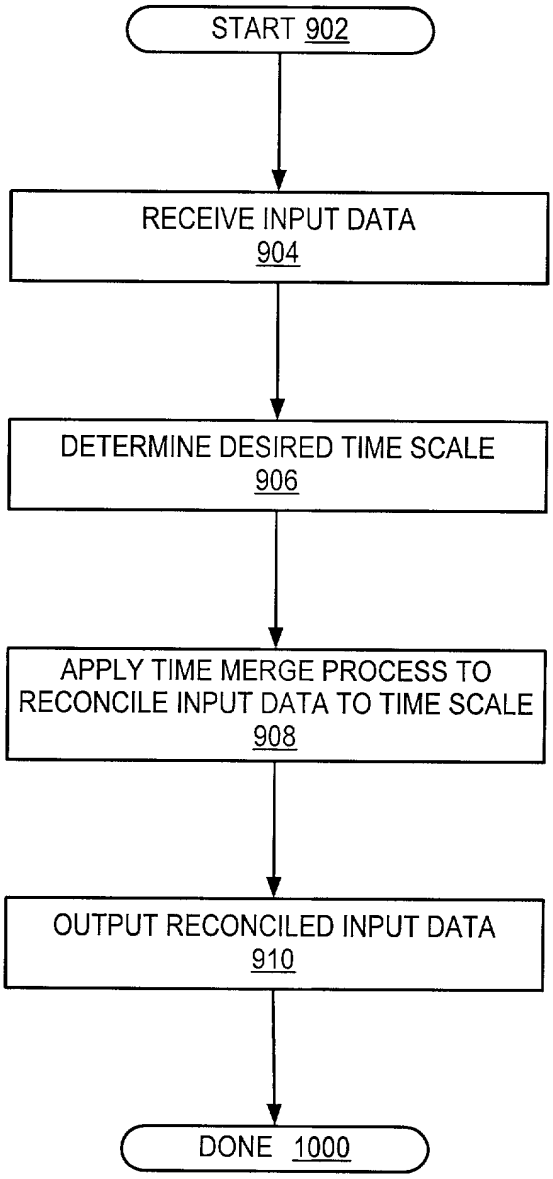

START 902
RECEIVE INPUT DATA 904
DETERMINE DESIRED TIME SCALE 906
APPLY TIME MERGE PROCESS TO RECONCILE INPUT DATA TO TIME SCALE 908
OUTPUT RECONCILED INPUT DATA 910
DONE 1000

FIG. 9A

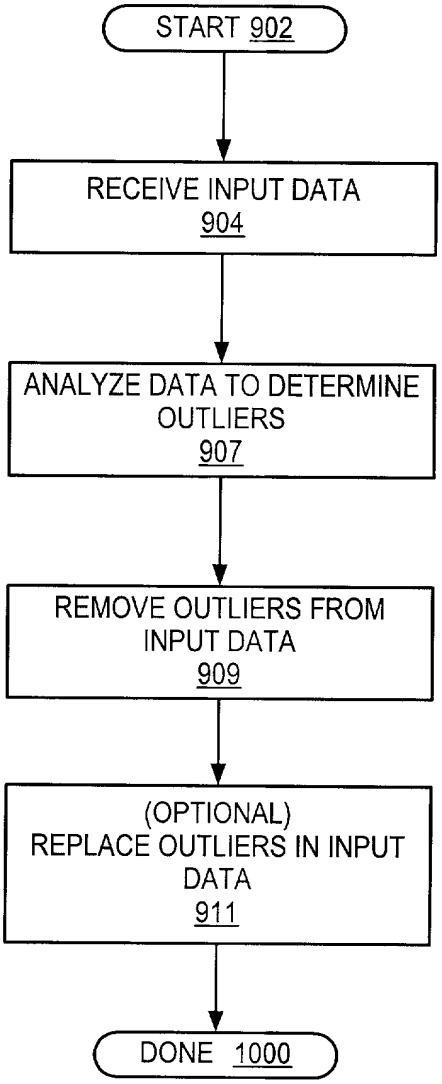

START 902
RECEIVE INPUT DATA
904
ANALYZE DATA TO DETERMINE
OUTLIERS
907
REMOVE OUTLIERS FROM
INPUT DATA
909
(OPTIONAL)
REPLACE OUTLIERS IN INPUT
DATA
911
DONE 1000

FIG. 9B

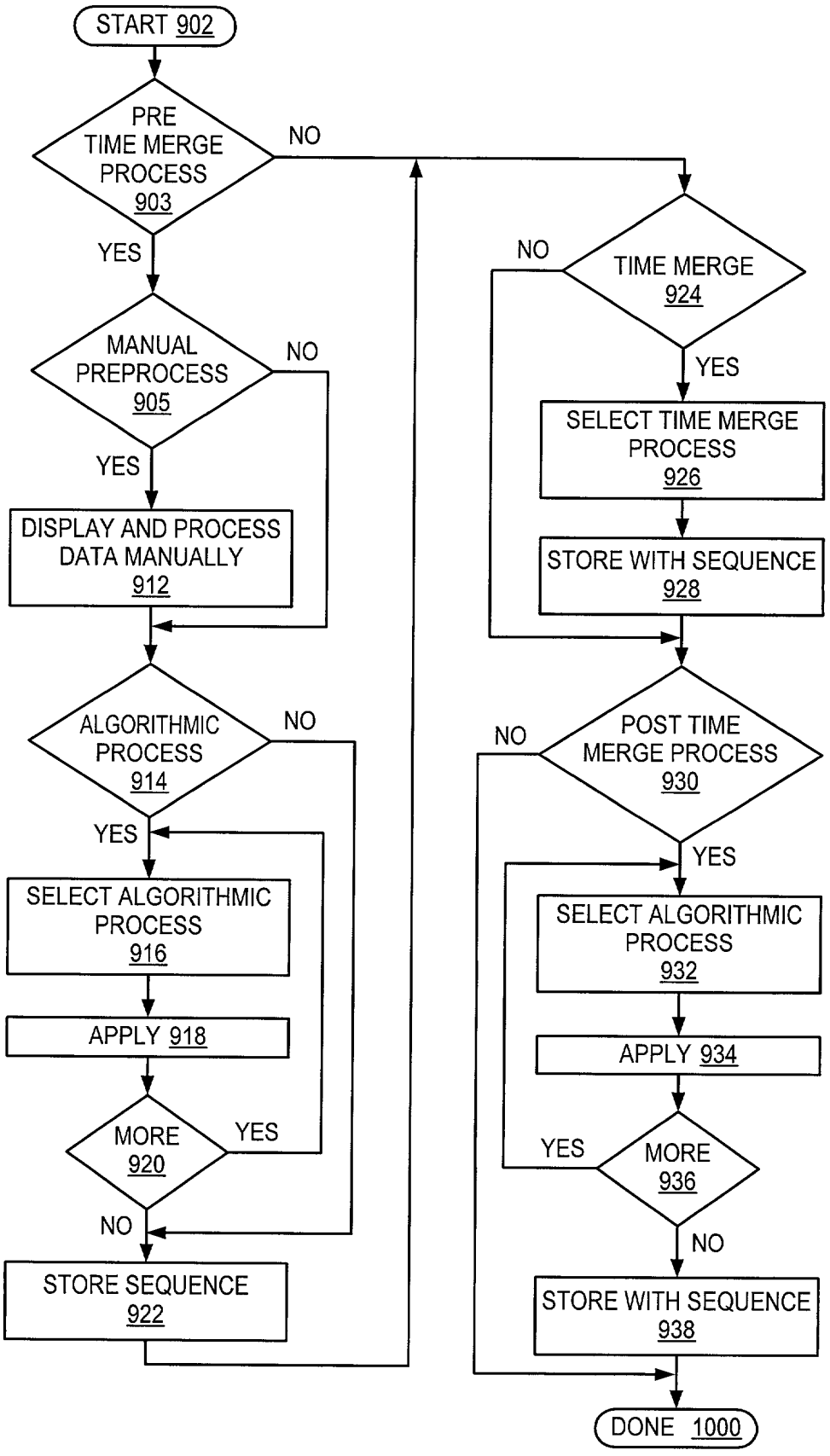

START 902
PRE TIME MERGE PROCESS 903
NO
YES
MANUAL PREPROCESS 905
NO
YES
DISPLAY AND PROCESS DATA MANUALLY 912
ALGORITHMIC PROCESS 914
NO
YES
SELECT ALGORITHMIC PROCESS 916
APPLY 918
MORE 920
YES
NO
STORE SEQUENCE 922
NO
TIME MERGE 924
YES
SELECT TIME MERGE PROCESS 926
STORE WITH SEQUENCE 928
POST TIME MERGE PROCESS 930
NO
YES
SELECT ALGORITHMIC PROCESS 932
APPLY 934
MORE 936
YES
NO
STORE WITH SEQUENCE 938
DONE 1000

FIG. 9C

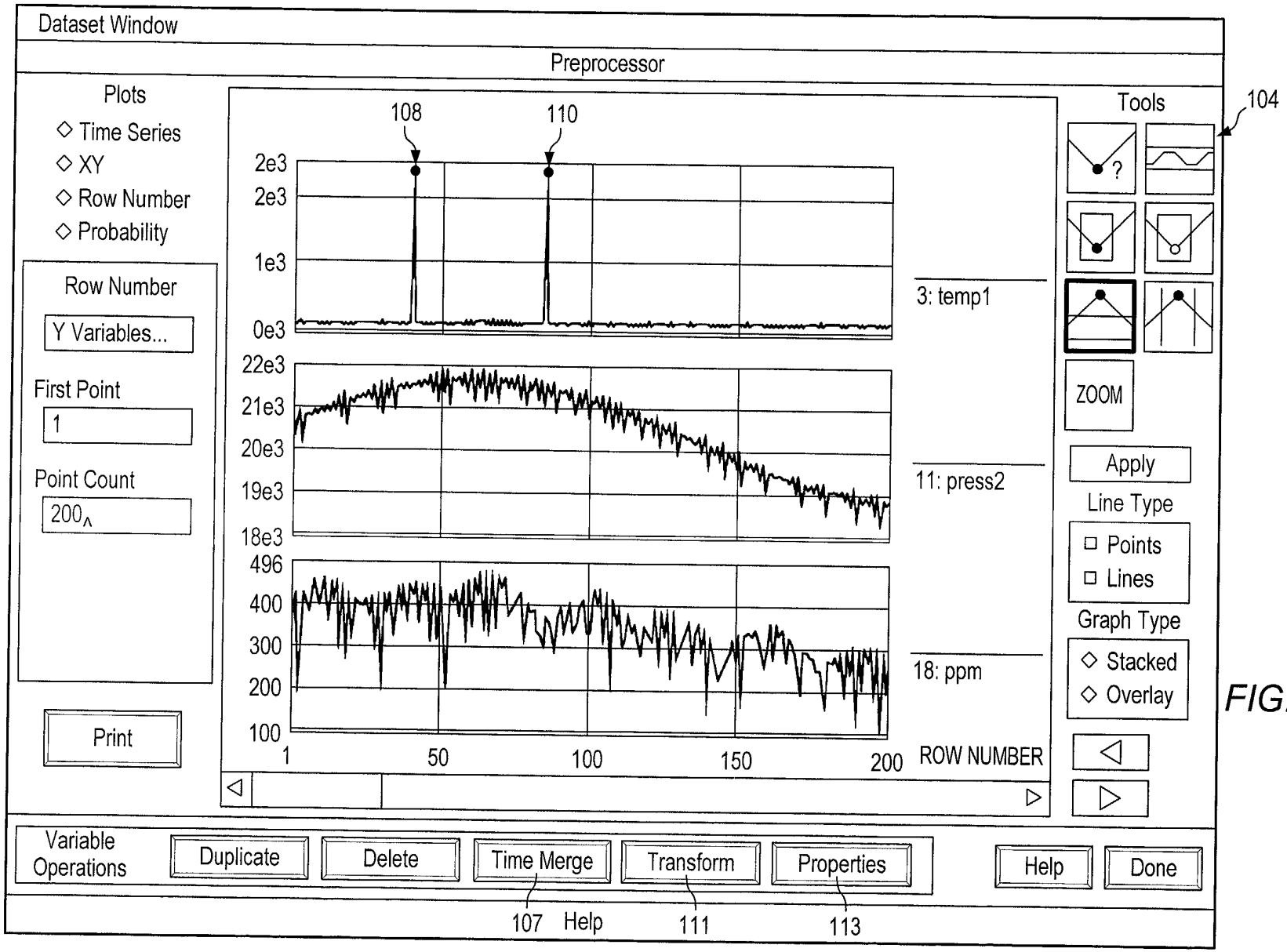

Dataset Window
Preprocessor
Plots
◇ Time Series
◇ XY
◇ Row Number
◇ Probability
Row Number
Y Variables...
First Point
1
Point Count
200
Print
108
110
2e3
2e3
1e3
0e3
22e3
21e3
20e3
19e3
18e3
496
400
300
200
100
1
50
100
150
200
ROW NUMBER
3: temp1
11: press2
18: ppm
Tools
104
ZOOM
Apply
Line Type
Points
Lines
Graph Type
Stacked
Overlay
Variable Operations
Duplicate
Delete
Time Merge
Transform
Properties
Help
Done
107
Help
111
113

FIG. 10A

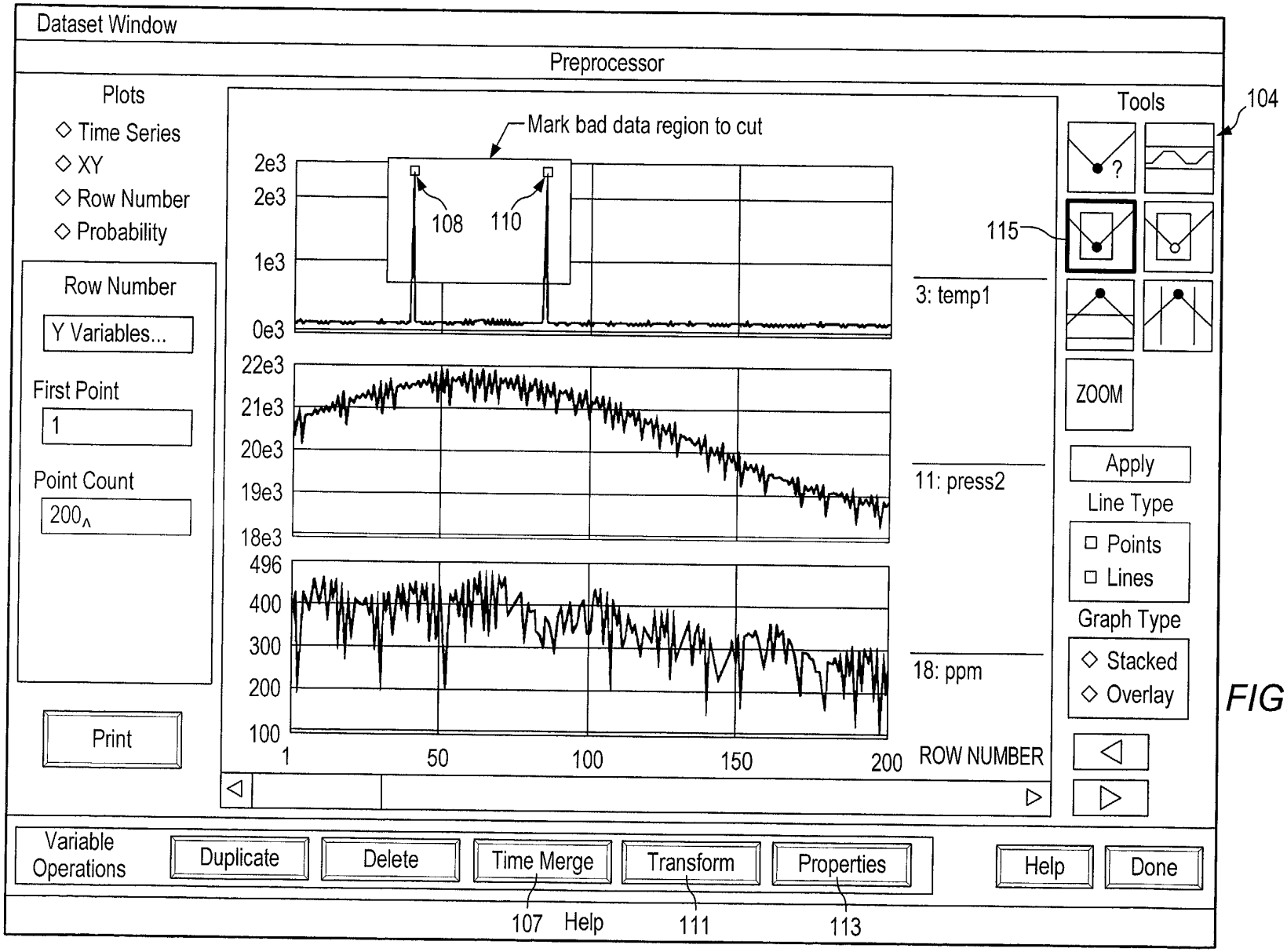

Dataset Window
Preprocessor
Plots
◇ Time Series
◇ XY
◇ Row Number
◇ Probability
Row Number
Y Variables...
First Point
1
Point Count
200
Print
Mark bad data region to cut
108
110
2e3
2e3
1e3
0e3
22e3
21e3
20e3
19e3
18e3
496
400
300
200
100
1
50
100
150
200
ROW NUMBER
3: temp1
11: press2
18: ppm
115
Tools
104
?
ZOOM
Apply
Line Type
Points
Lines
Graph Type
Stacked
Overlay
Variable Operations
Duplicate
Delete
Time Merge
Transform
Properties
Help
Done
107
Help
111
113

FIG. 10B

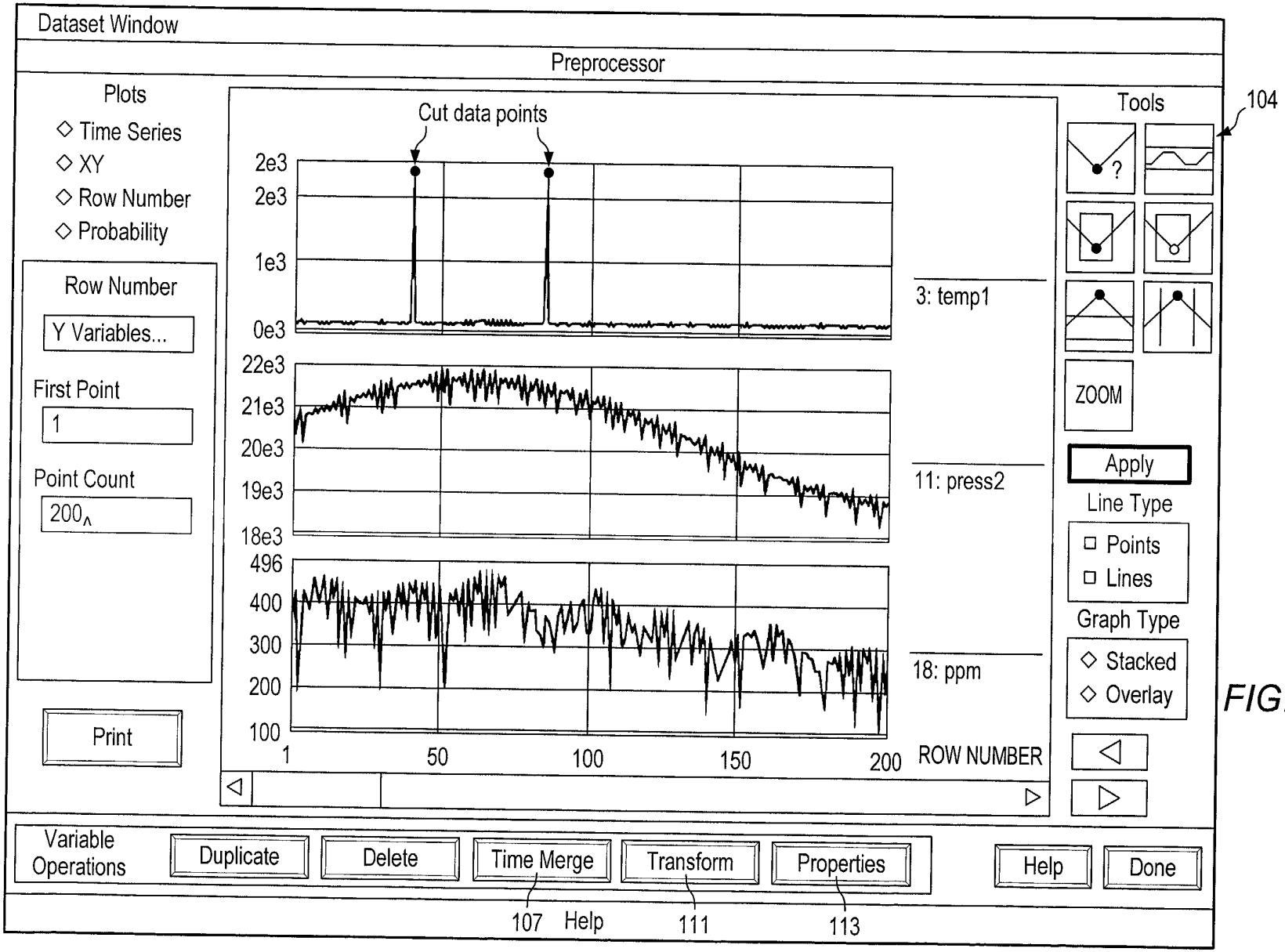

Dataset Window
Preprocessor
Plots
◇ Time Series
◇ XY
◇ Row Number
◇ Probability
Row Number
Y Variables...
First Point
1
Point Count
200
Print
Cut data points
2e3
2e3
1e3
0e3
22e3
21e3
20e3
19e3
18e3
496
400
300
200
100
1
50
100
150
200
ROW NUMBER
3: temp1
11: press2
18: ppm
Tools
104
?
ZOOM
Apply
Line Type
Points
Lines
Graph Type
Stacked
Overlay
Variable Operations
Duplicate
Delete
Time Merge
Transform
Properties
Help
Done
107
Help
111
113

FIG. 10C

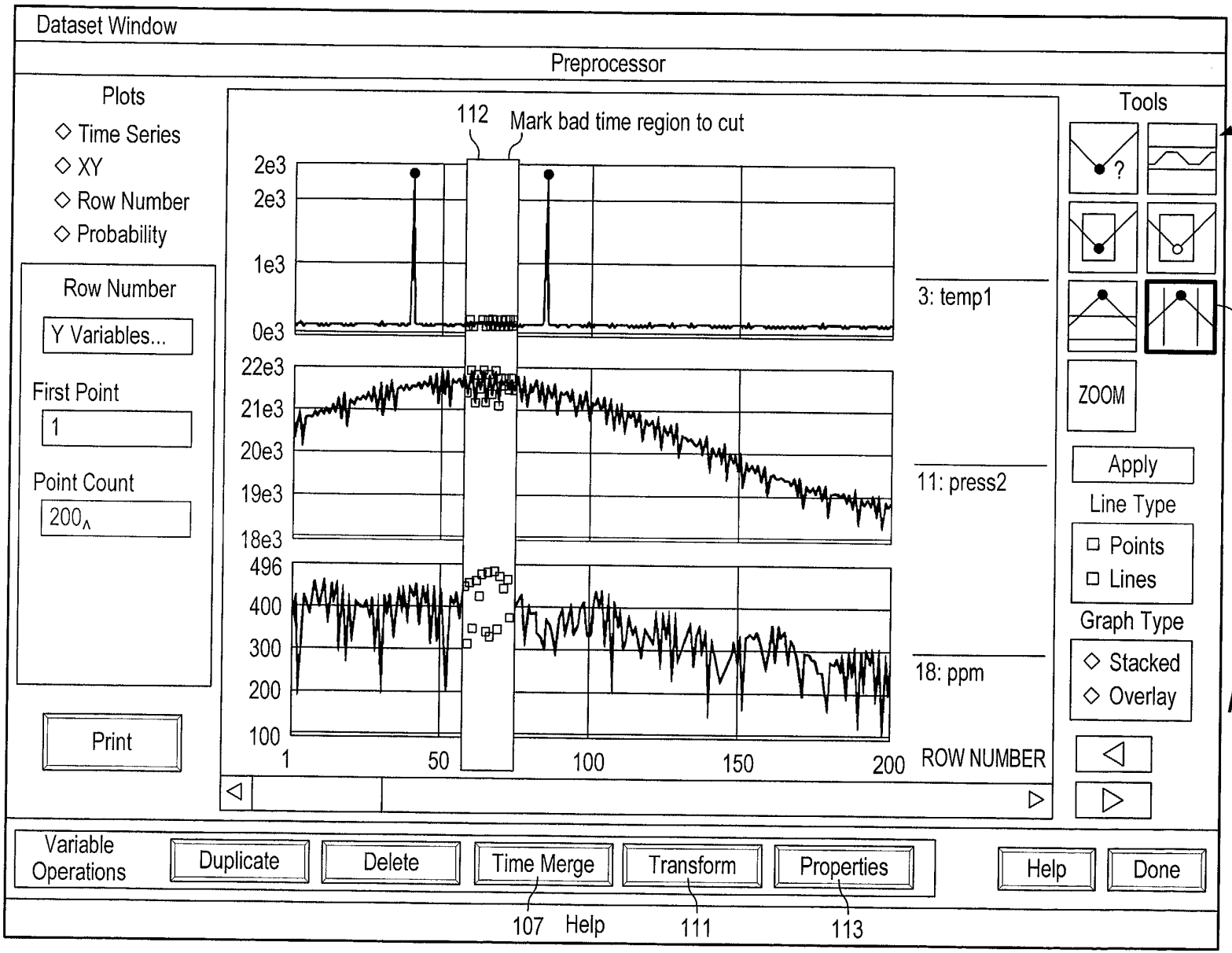

Dataset Window
Preprocessor
Plots
◇ Time Series
◇ XY
◇ Row Number
◇ Probability
Row Number
Y Variables...
First Point
1
Point Count
200
Print
112
Mark bad time region to cut
2e3
2e3
1e3
0e3
22e3
21e3
20e3
19e3
18e3
496
400
300
200
100
1
50
100
150
200
ROW NUMBER
3: temp1
11: press2
18: ppm
Tools
104
105
ZOOM
Apply
Line Type
Points
Lines
Graph Type
Stacked
Overlay
Variable Operations
Duplicate
Delete
Time Merge
Transform
Properties
Help
Done
107
Help
111
113

FIG. 10D

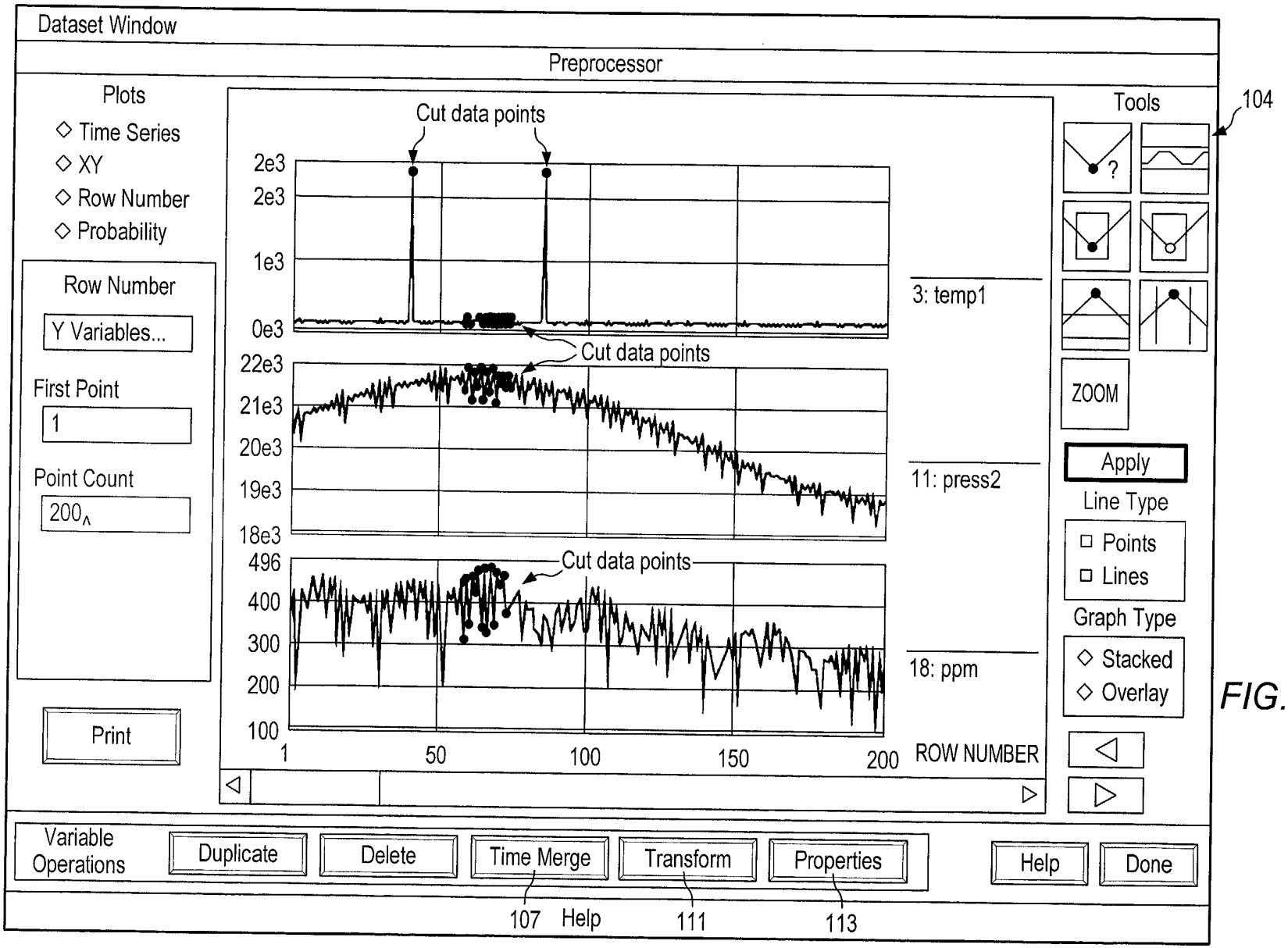

Dataset Window
Preprocessor
Plots
Time Series
XY
Row Number
Probability
Row Number
Y Variables...
First Point
1
Point Count
200
Print
Cut data points
2e3
2e3
1e3
0e3
3: temp1
Cut data points
22e3
21e3
20e3
19e3
18e3
11: press2
Cut data points
496
400
300
200
100
18: ppm
1
50
100
150
200
ROW NUMBER
Tools
104
ZOOM
Apply
Line Type
Points
Lines
Graph Type
Stacked
Overlay
Variable Operations
Duplicate
Delete
Time Merge
Transform
Properties
Help
Done
107
Help
111
113

FIG. 10E

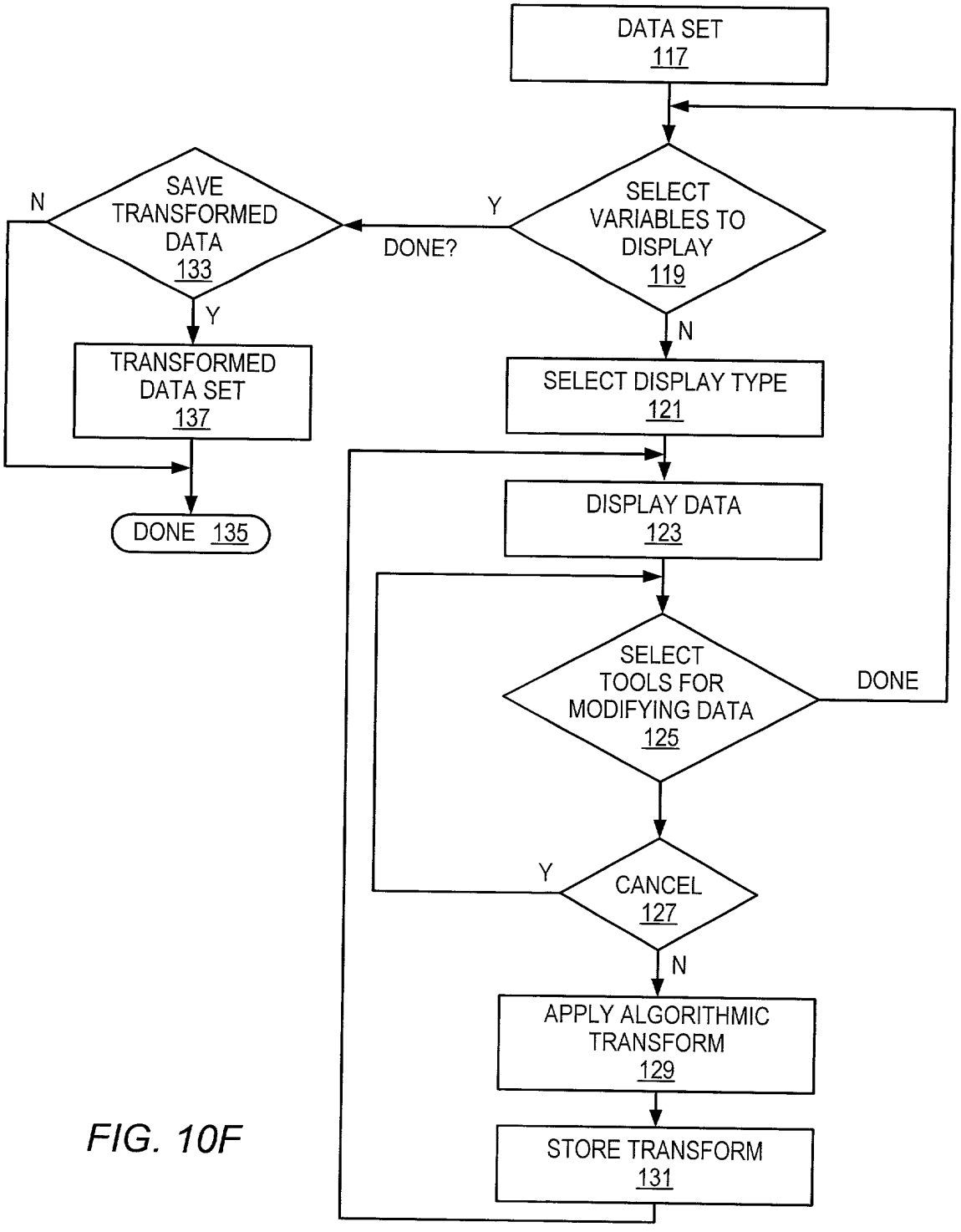

DATA SET
117
SELECT VARIABLES TO DISPLAY
119
Y
DONE?
N
SAVE TRANSFORMED DATA
133
Y
TRANSFORMED DATA SET
137
DONE 135
N
SELECT DISPLAY TYPE
121
DISPLAY DATA
123
SELECT TOOLS FOR MODIFYING DATA
125
DONE
Y
CANCEL
127
N
APPLY ALGORITHMIC TRANSFORM
129
STORE TRANSFORM
131

FIG. 10F

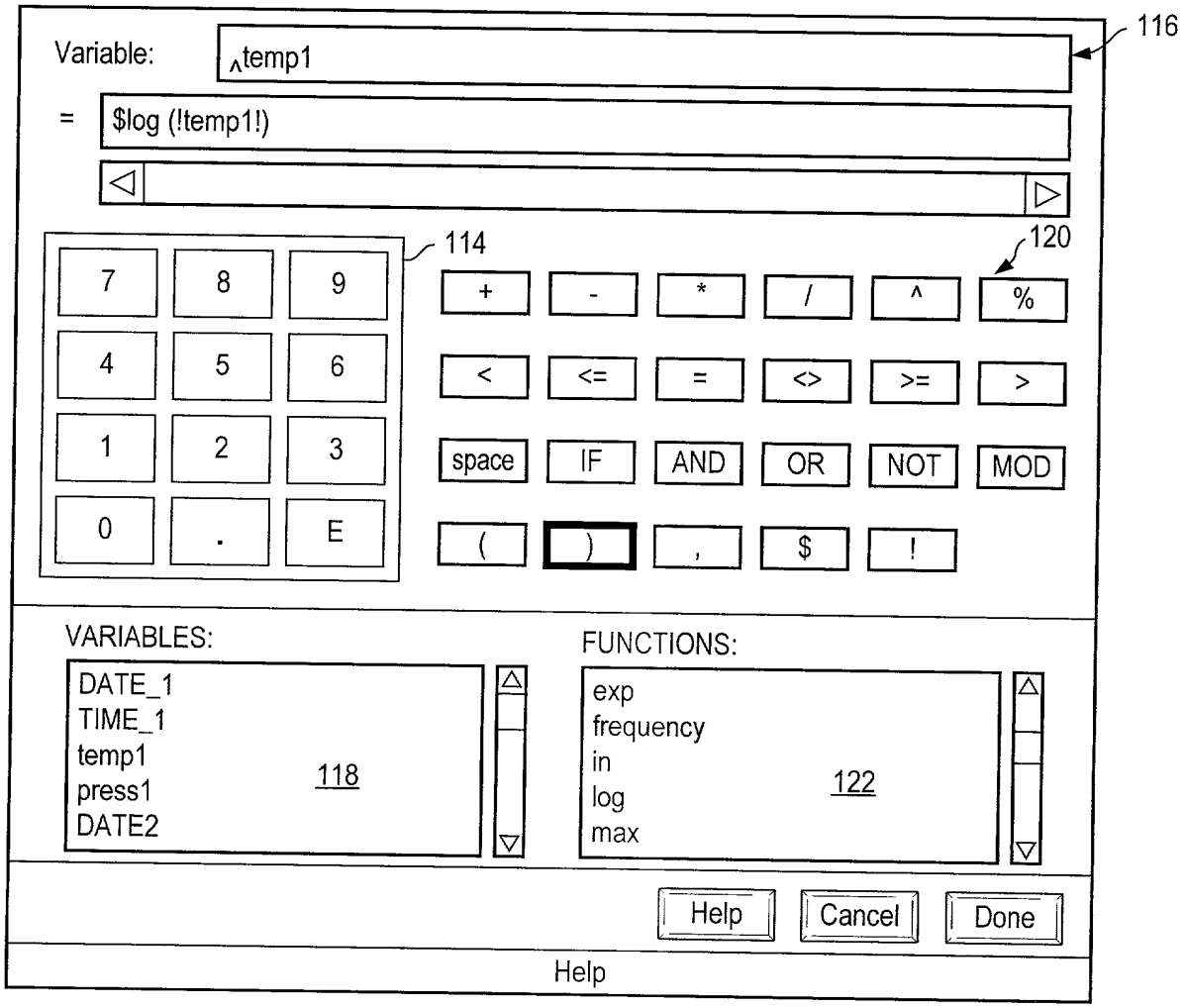

Variable:
^temp1
116
=
$log (!temp1!)
114
120
7
8
9
4
5
6
1
2
3
0
.
E
+
-
*
/
^
%
<
<=
=
<>
>=
>
space
IF
AND
OR
NOT
MOD
(
)
,
$
!
VARIABLES:
DATE_1
TIME_1
temp1
press1
DATE2
118
FUNCTIONS:
exp
frequency
in
log
max
122
Help
Cancel
Done
Help

FIG. 11

TABLE 1

Name	DATE_1	TIME_1	temp1	press1	DATE_2	TIME_2	flow1	temp2
Row	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
36	1/2/92	12:00:59	81.87	1552.80	1/3/92	23:00:59	1211.00	276.95
37	1/2/92	13:00:59	58.95	1489.19	1/4/92	01:00:59	1210.90	274.44
38	1/2/92	14:00:59	83.72	1558.00	1/4/92	3:00:591	1211.09	277.38
39	1/2/92	15:00:59	53.72	1474.40	1/4/92	5:01:00	1210.69	274.01

TABLE 2

Name	DATE_1	TIME_1	temp1	press1	DATE_2	TIME_2	flow1	temp2
Row	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
36	1/2/92	12:00:59	1.91	1552.80	1/3/92	23:00:59	1211.00	276.95
37	1/2/92	13:00:59	1.77	1489.19	1/4/92	01:00:59	1210.90	274.44
38	1/2/92	14:00:59	1.92	1558.00	1/4/92	3:00:591	1211.09	277.38
39	1/2/92	15:00:59	1.73	1474.40	1/4/92	5:01:00	1210.69	274.01

PROPERTIES 2

markcut(temp1, 1, 2068, 920.844325,160000000000000000000000.000000)
markcut(temp1, 1, 58, 73, −160000000000000000000.0000001,600000000000000000000
$log(temp1)

TABLE 3

Name	DATE	time	temp1	press1	flow1	temp2	press2	flow2
Row		Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7
36	1/2/92	12:00:00	1.87	1530.00	1211.69	274.50	2160.00	533.29
37	1/2/92	13:00:00	1.87	1530.00	1211.69	274.50	2160.00	533.29
38	1/2/92	14:00:00	1.87	1530.00	1211.69	274.50	2160.00	533.29
39	1/2/92	15:00:00	1.87	1530.00	1211.69	274.50	2160.00	533.29

PROPERTIES 3

markcut(temp1, 1, 2068, 938.633160,160000000000000000000.000000)
markcut(temp1, 57, 71, −160000000000000000000.0000001,600000000000000000000
$log(temp1)
tmerge(temp1, time, 0, 1666666663417741312.000000)

TABLE 4

Name	DATE	time	temp1	press1	flow1	temp2	press2	flow2
Row		Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7
36	1/2/92	12:00:00	5001.87	1530.00	1211.69	274.50	2160.00	533.29
37	1/2/92	13:00:00	5001.87	1530.00	1211.69	274.50	2160.00	533.29
38	1/2/92	14:00:00	5001.87	1530.00	1211.69	274.50	2160.00	533.29
39	1/2/92	15:00:00	5001.87	1530.00	1211.69	274.50	2160.00	533.29

PROPERTIES 4

markcut(temp1, 1, 2068,938.633160,160000000000000000000.000000)
markcut(temp1, 57, 71, −160000000000000000000.0000001,600000000000000000000)
$log(temp1)
tmerge (temp1, time, 0, 16666666663417741312.0000000)
temp1 + 5000

FIG. 12

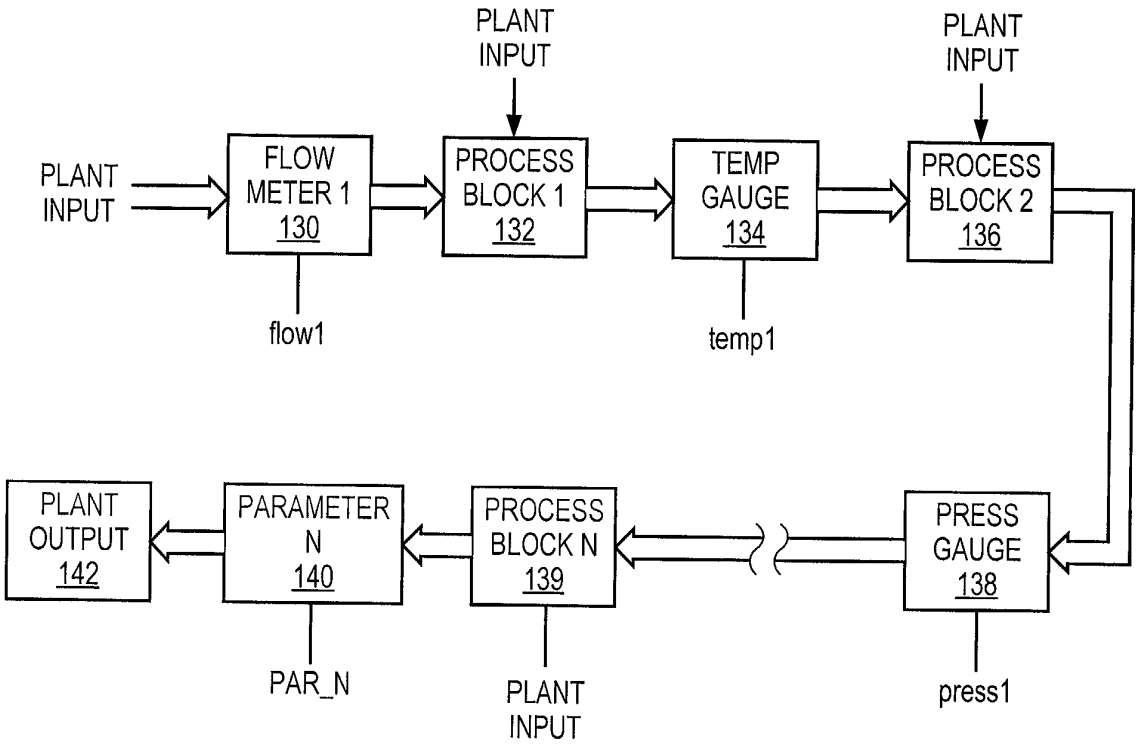

PLANT INPUT
PLANT INPUT
PLANT INPUT
FLOW METER 1 130
PROCESS BLOCK 1 132
TEMP GAUGE 134
PROCESS BLOCK 2 136
flow1
temp1
PLANT OUTPUT 142
PARAMETER N 140
PROCESS BLOCK N 139
PRESS GAUGE 138
PAR_N
PLANT INPUT
press1

FIG. 13

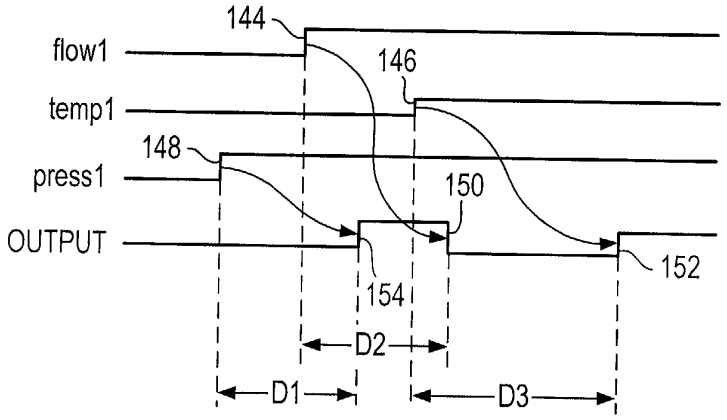


FIG. 14

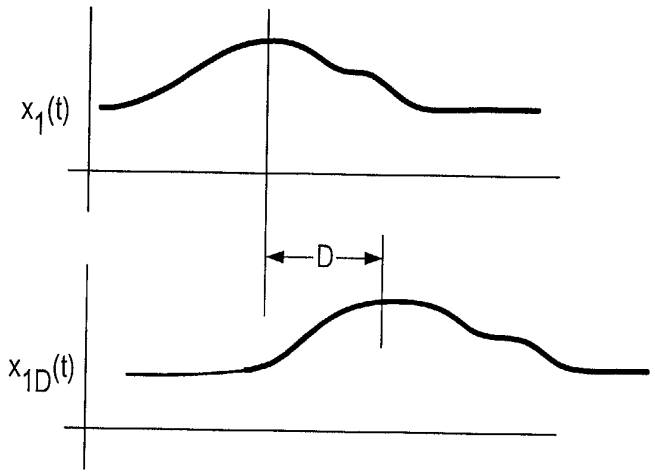


FIG. 15

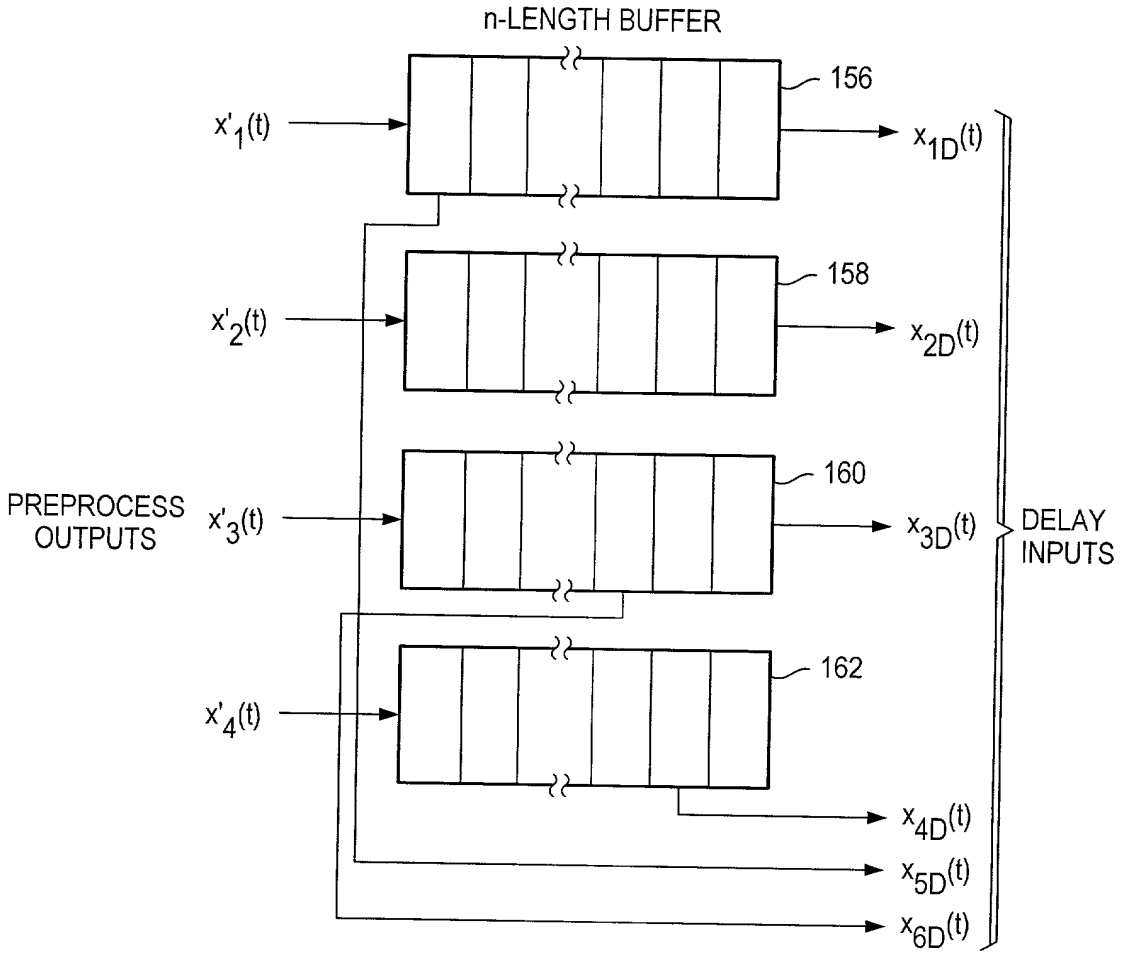

n-LENGTH BUFFER
156
158
160
162
$x'_1(t)$
$x'_2(t)$
$x'_3(t)$
$x'_4(t)$
PREPROCESS OUTPUTS
$x_{1D}(t)$
$x_{2D}(t)$
$x_{3D}(t)$
$x_{4D}(t)$
$x_{5D}(t)$
$x_{6D}(t)$
DELAY INPUTS

FIG. 16

DELAY SELECTION DISPLAY

TIME	TEMP1	PRESS1	FLOW-RATE1	TEMP2	PRESS2	FLOW-RATE2	TEMP3	PRESS3	FLOW-RATE3	PPM
-4.5										
-4.0	INPUT									
-3.5	INPUT	INPUT								
-3.0	INPUT	INPUT	INPUT	INPUT	INPUT					
-2.5		INPUT				INPUT				
-2.0							INPUT			
-1.5								INPUT	INPUT	
-1.0										
-0.5										
0.0										OUTPUT
0.5										OUTPUT
1.0										OUTPUT
1.5										

FIG. 17

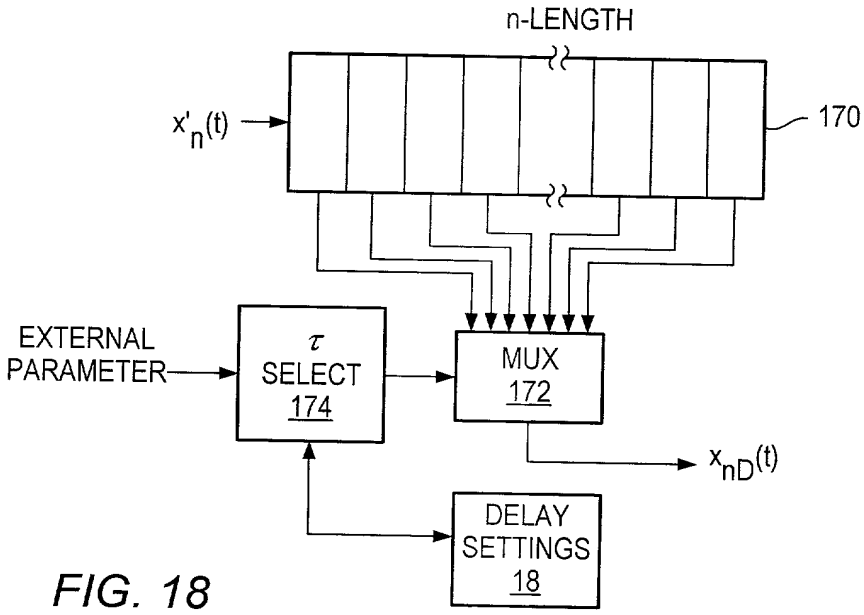

n-LENGTH
$x'_n(t)$
170
EXTERNAL PARAMETER
τ SELECT 174
MUX 172
$x_{nD}(t)$
DELAY SETTINGS 18

FIG. 18

Subject Technology

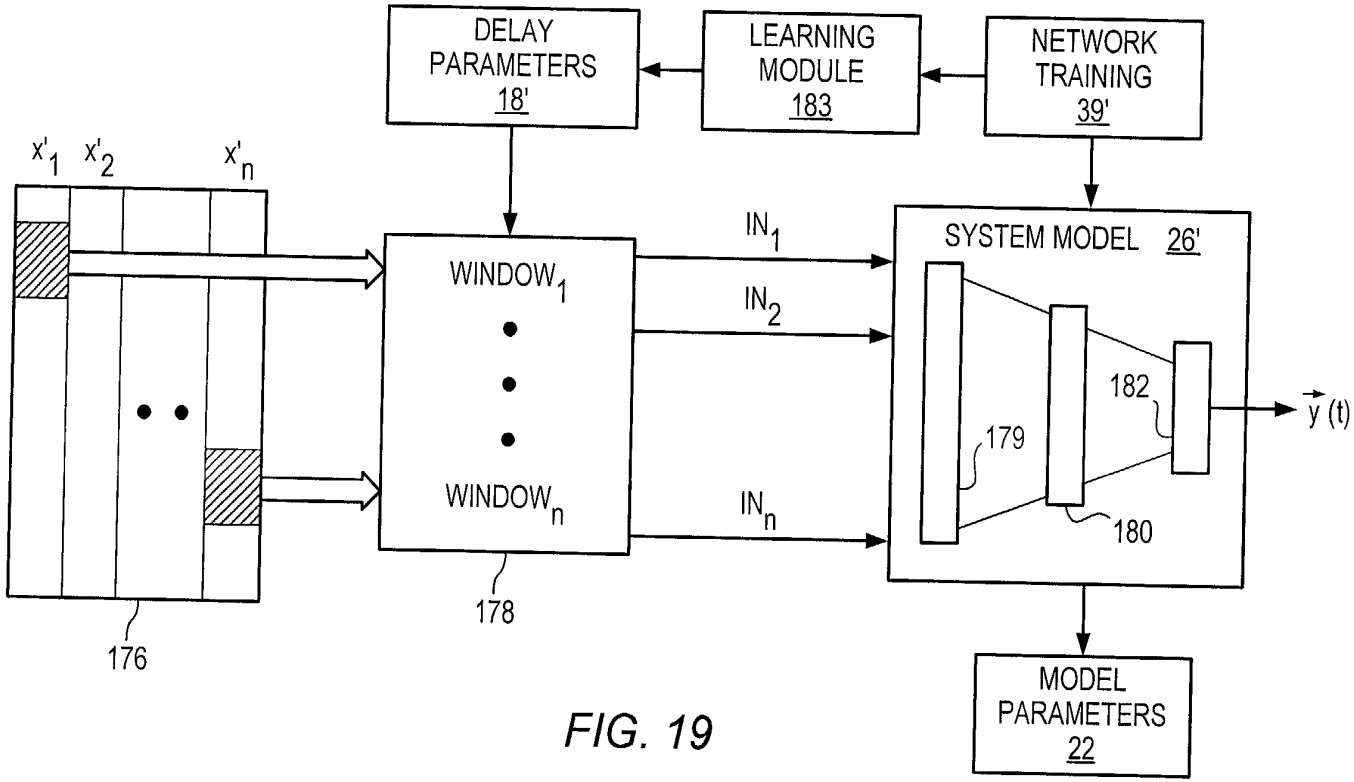


FIG. 19

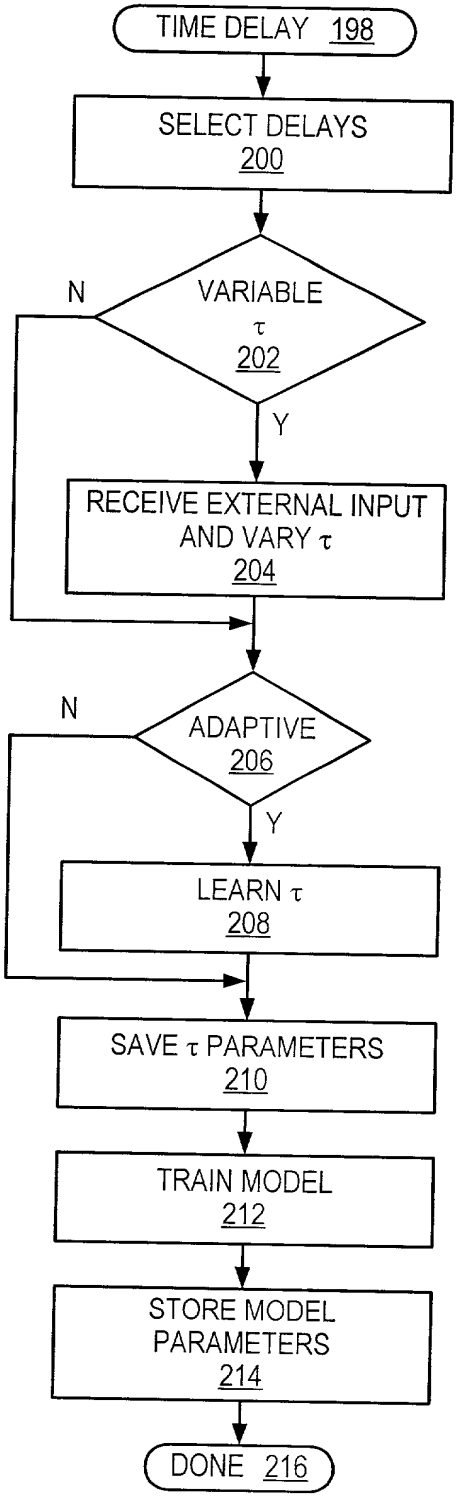

TIME DELAY 198
SELECT DELAYS 200
VARIABLE τ 202
N
Y
RECEIVE EXTERNAL INPUT AND VARY τ 204
ADAPTIVE 206
N
Y
LEARN τ 208
SAVE τ PARAMETERS 210
TRAIN MODEL 212
STORE MODEL PARAMETERS 214
DONE 216

FIG. 20

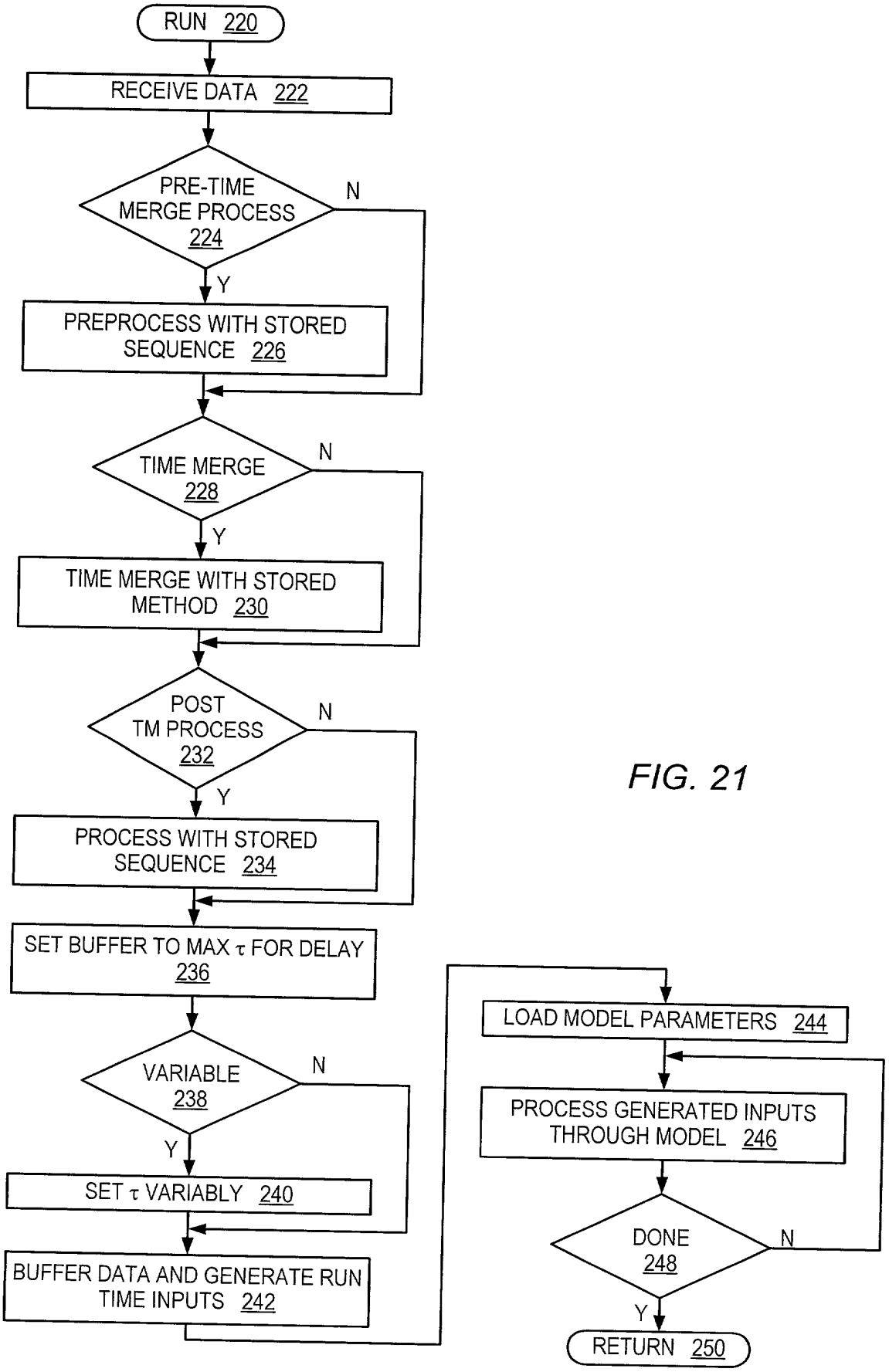

RUN 220
RECEIVE DATA 222
PRE-TIME MERGE PROCESS 224
N
Y
PREPROCESS WITH STORED SEQUENCE 226
TIME MERGE 228
N
Y
TIME MERGE WITH STORED METHOD 230
POST TM PROCESS 232
N
Y
PROCESS WITH STORED SEQUENCE 234
SET BUFFER TO MAX τ FOR DELAY 236
VARIABLE 238
N
Y
SET τ VARIABLY 240
BUFFER DATA AND GENERATE RUN TIME INPUTS 242
LOAD MODEL PARAMETERS 244
PROCESS GENERATED INPUTS THROUGH MODEL 246
DONE 248
N
Y
RETURN 250

FIG. 21

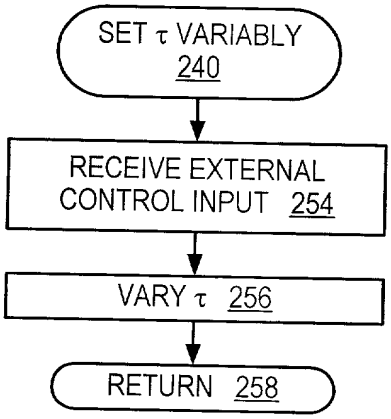

SET τ VARIABLY
240
RECEIVE EXTERNAL
CONTROL INPUT 254
VARY τ 256
RETURN 258

FIG. 22

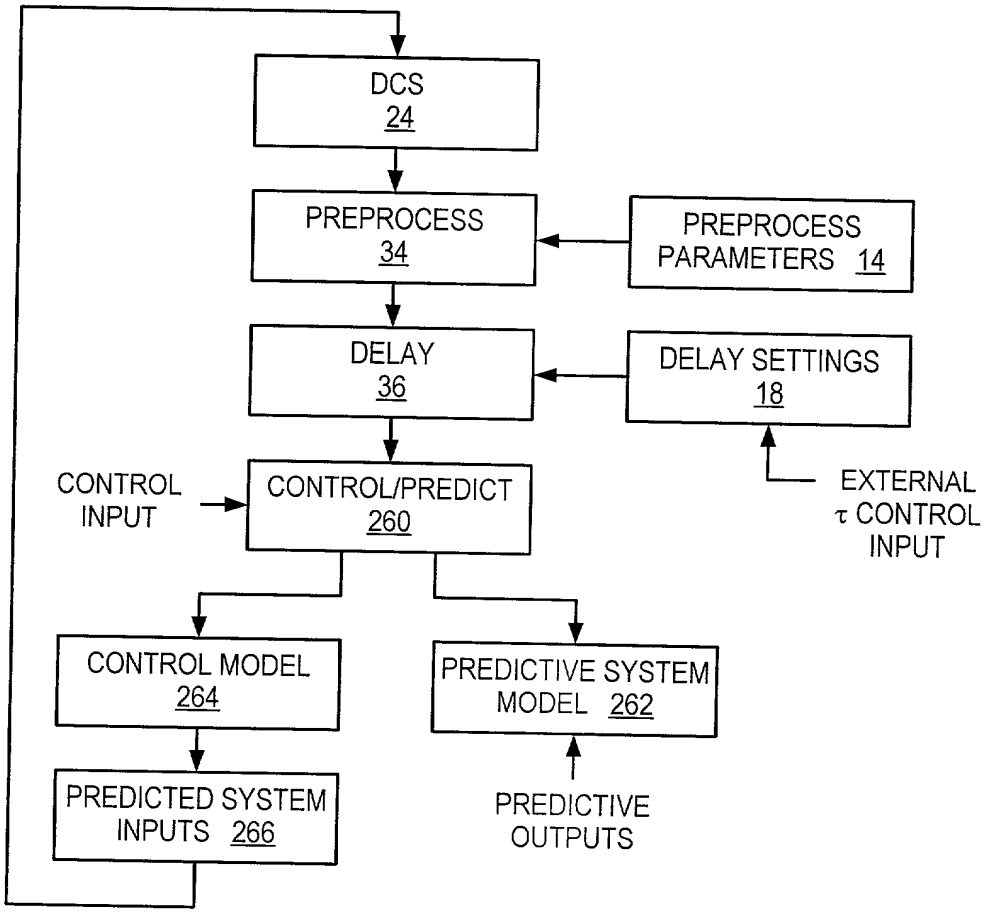

DCS
24
PREPROCESS
34
PREPROCESS
PARAMETERS 14
DELAY
36
DELAY SETTINGS
18
CONTROL
INPUT
CONTROL/PREDICT
260
EXTERNAL
τ CONTROL
INPUT
CONTROL MODEL
264
PREDICTIVE SYSTEM
MODEL 262
PREDICTED SYSTEM
INPUTS 266
PREDICTIVE
OUTPUTS

FIG. 23